

WHAT IS CLAIMED IS:

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1. A loading mechanism for loading an information recording medium in a predetermined position and unloading the information recording medium therefrom, the loading mechanism comprising:

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a frame;

a tray on which the information recording medium is placeable in a predetermined position, the tray being movable in first and second opposite directions between a first position where the information recording medium is contained completely inside said frame and a second position where the information recording medium is exposed completely outside said frame, the tray including a groove part extending along the first and second opposite

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directions; and

at least three projections arranged on said frame at predetermined intervals along the first and second opposite directions, the projections including first and second guide and support parts forming first and second ends of the arrangement of the

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projections, the first and second guide and support parts coming into substantially point or linear contact with the groove part of said tray so as to guide and support said tray when said tray is in the
5 second position.

10 2. The loading mechanism as claimed in claim 1, wherein:

 each of the first and second guide and support parts includes side faces in third and fourth opposite directions that are perpendicular to the
15 first and second opposite directions in a plane parallel to a plane on which said tray is movable;
and

 at least one of the side faces of each of the first and second guide and support parts includes
20 a curved part.

25 3. The loading mechanism as claimed in

claim 2, wherein the curved part of the one of the
side faces of each of the first and second guide and
support parts has as large a radius of curvature as
possible within a range that allows the curved part
5 to come into substantially point or linear contact
with the groove part of said tray.

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4. The loading mechanism as claimed in
claim 1, wherein each of the first and second guide
and support parts has a pin-like shape.

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5. The loading mechanism as claimed in
claim 1, wherein one of the projections which one is
20 positioned between the first and second guide and
support parts is prevented from being in contact with
said tray in a normal state.

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6. The loading mechanism as claimed in claim 5, wherein the one of the projections comprises a pair of pin parts and a plate-like part positioned between the pin parts to connect the pin parts, the
5 pin parts and the plate-like part being formed integrally with one another and arranged along the first and second opposite directions.

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7. The loading mechanism as claimed in claim 5, wherein the one of the projections is a plate-like connection that connects the first and
15 second guide and support parts.

20 8. The loading mechanism as claimed in claim 1, wherein a distance between the first and second guide and support parts is substantially maximized within a range that allows the first and second guide and support parts to be provided to said
25 frame and to guide and support said tray when said

tray is in the second position.

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9. The loading mechanism as claimed in claim 1, further comprising a drive mechanism that drives said tray between the first and second positions.

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10. The loading mechanism as claimed in claim 9, wherein said drive mechanism comprises a motor.

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11. The loading mechanism as claimed in claim 1, wherein the information recording medium is an optical disk.

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12. A loading mechanism for loading an information recording medium in a predetermined position and unloading the information recording medium therefrom, the loading mechanism comprising:

5 a tray on which the information recording medium is placeable in a predetermined position, the tray including at least three projections arranged along first and second opposite directions, the projections including first and second projections
10 forming first and second ends of the arrangement of the projections; and

 a frame including a guide groove that guides the projections of said tray, the guide groove extending along the first and second opposite
15 directions,

 wherein:

 the tray is movable in the first and second opposite directions between a first position where the information recording medium is contained
20 completely inside said frame and a second position where the information recording medium is exposed completely outside said frame; and

 the first and second projections come into substantially point or linear contact with the groove
25 part of said tray when said tray is in the second

position.

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13. The loading mechanism as claimed in claim 12, further comprising a drive mechanism that drives said tray between the first and second positions.

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14. The loading mechanism as claimed in claim 13, wherein said drive mechanism comprises a motor.

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15. The loading mechanism as claimed in claim 12, wherein the information recording medium is an optical disk.

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16. A drive unit performing at least
information reproduction among information recording
on, information reproduction from, and information
erasure from an information recording medium, the
5 drive unit comprising:

a main body; and

a loading mechanism as set forth in claim 1,
the loading mechanism being attached to said main
body,

10 wherein:

specific processing including the
information reproduction is performed on the
information recording medium in the first position;
and

15 the information recording medium is placed
on or removed from said tray in the second position.

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17. A drive unit performing at least
information reproduction among information recording
on, information reproduction from, and information
erasure from an information recording medium, the
25 drive unit comprising:

a main body; and

a loading mechanism as set forth in claim 12,
the loading mechanism being attached to said main
body,

5 wherein:

specific processing including the
information reproduction is performed on the
information recording medium in the first position;
and

10 the information recording medium is placed
on or removed from said tray in the second position.

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18. An information processing apparatus,
comprising:

a drive unit as set forth in claim 16;

an input device inputting information;

20 a display unit displaying information;

a storage part storing information; and

a control part controlling an operation of
the information processing apparatus.

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19. An information processing apparatus,
comprising:

5 a drive unit as set forth in claim 17;
an input device inputting information;
a display unit displaying information;
a storage part storing information; and
a control part controlling an operation of
the information processing apparatus.

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20. A loading mechanism, comprising:

15 a tray for transporting an optical disk, the
tray including a rail groove and a disk placement
surface on which the optical disk is placeable;

a frame including a rail engaging the rail
groove of said tray, and a drive mechanism for
driving said tray in first and second opposite
20 directions, the drive mechanism driving said tray so
that said tray slides on the rail so as to be ejected
in the first direction at a time of unloading said
tray; and

a rib provided on at least one of first and
25 second opposite surfaces of a rear part of said tray,

the rear part including a portion of said tray which
portion remains inside said frame when said tray is
ejected, the first and second opposite surfaces of
the rear part being parallel to the disk placement
5 surface of said tray.

10 21. The loading mechanism as claimed in
claim 20, wherein:

said rib is provided on at least the first
surface of the rear part, the first surface being
included in the disk placement surface of said tray;
15 and

a dimension of said rib in a direction
perpendicular to the first surface of the rear part
is determined so that a distance between said rib and
one of a clamper for holding the optical disk in said
20 frame and a clamper holder for holding the clamper is
less than or equal to a thickness of the optical disk.

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22. A loading mechanism, comprising:

a tray for transporting an optical disk, the tray including a rail groove and a disk placement surface on which the optical disk is placeable; and

5 a frame including a rail engaging the rail groove of said tray, and a drive mechanism for driving said tray in first and second opposite directions, the drive mechanism driving said tray so that said tray slides on the rail so as to be ejected
10 in the first direction at a time of unloading said tray,

wherein:

the rail groove includes first and second linear projections each extending along the first and
15 second opposite directions, the second linear projection being closer to a center of said tray than the first linear projection is; and

a dimension of the first linear projection in a direction perpendicular to the disk placement
20 surface of said tray is maximized within a range that prevents the first linear projection from interfering with said frame so that an overlap between the rail and the first linear projection increases.

23. The loading mechanism as claimed in claim 22, wherein

the dimension of the first linear projection in the direction perpendicular to the disk placement surface of said tray is provided with a smaller
5 tolerance in a first part of a portion of said tray than in a second part of the portion of said tray, the portion of said tray remaining inside said frame with the first part thereof engaging the rail when
10 said tray is ejected; and

the dimension of the first linear projection in the direction perpendicular to the disk placement surface of said tray is provided with minus tolerance
15 in the second part of the portion of said tray.

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24. A loading mechanism, comprising:

20 a tray for transporting an optical disk, the tray including a rail groove and a disk placement surface on which the optical disk is placeable; and
a frame including a rail engaging the rail groove of said tray, and a drive mechanism for
25 driving said tray in first and second opposite

directions, the drive mechanism driving said tray so
that said tray slides on the rail so as to be ejected
in the first direction at a time of unloading said
tray, the frame further including a plurality of tray
5 holding parts for preventing said tray from being
lifted in a direction away from said frame,

wherein a projection in a direction away
from said frame and perpendicular to the disk
placement surface of said tray is provided to said
10 tray in at least a region that opposes any of the
tray holding parts when said tray is ejected.

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25. A loading mechanism, comprising:

a tray for transporting an optical disk, the
tray including a rail groove including a linear
projection to which a rack is provided;

20 a frame including a rail engaging the rail
groove of said tray, and a drive mechanism for
driving said tray in first and second opposite
directions, the drive mechanism including a loading
motor and a loading gear engaging the rack of said
25 tray, the drive mechanism driving said tray so that

said tray slides on the rail so as to be ejected in the first direction at a time of unloading said tray; and

an auxiliary rack provided to an end part in
5 the second direction of the linear projection of the rail groove of said tray.

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26. An optical disk drive unit, comprising:
a main body; and
a loading mechanism as set forth in claim 20,
the loading mechanism being attached to said main
15 body.

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27. The optical disk drive unit as claimed in claim 26, wherein:

said rib is provided on at least the first surface of the rear part, the first surface being included in the disk placement surface of said tray;
25 and

a dimension of said rib in a direction perpendicular to the first surface of the rear part is determined so that a distance between said rib and one of a clamper for holding the optical disk in said frame and a clamper holder for holding the clamper is less than or equal to a thickness of the optical disk.

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28. An optical disk drive unit, comprising:
a main body; and
a loading mechanism as set forth in claim 22,
the loading mechanism being attached to said main
body.

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29. The optical disk drive unit as claimed in claim 28, wherein
the dimension of the first linear projection in the direction perpendicular to the disk placement surface of said tray is provided with a smaller tolerance in a first part of a portion of said tray

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than in a second part of the portion of said tray,
the portion of said tray remaining inside said frame
with the first part thereof engaging the rail when
said tray is ejected; and

5 the dimension of the first linear projection
in the direction perpendicular to the disk placement
surface of said tray is provided with minus tolerance
in the second part of the portion of said tray.

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30. An optical disk drive unit, comprising:
a main body; and

15 a loading mechanism as set forth in claim 24,
the loading mechanism being attached to said main
body.

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31. An optical disk drive unit, comprising:
a main body; and

 a loading mechanism as set forth in claim 25,
25 the loading mechanism being attached to said main

body.